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ABSTRACT

This article examines the impact of end-users on the information profession and looks ahead to what the future holds. It examines three waves of end-users that emerged with new search technologies: (1) full-text, natural language online systems; (2) CD-ROMs; and (3) the Internet. In the 1980s, when full-text online systems such as Textline, NEXIS, and FT Profile came into use, many thought that the empowerment of the end-user meant the demise of the intermediary--the information professional. However, the information profession embraced end-use, and saw that the prime impact of end-use was to increase the demand on mediated searching. The CD-ROM was thought to be a much more appropriate end-user tool because of its user-friendliness. CD-ROM use is still growing rapidly, with increases in the number of published titles from 817 titles in 1990 to 27.8 million titles in 1994. The Internet is the most recent online end-user tool. The Internet has dramatically increased the number of online end-users, from thousands to millions. Information professionals will have to become more specialist, more trainer, more proactive, and more reference specialist, moving between the various information channels, balancing one against another and choosing the most cost-effective option. Public libraries face the greatest threat from the digital revolution, since they got a late start, and are struggling with their role--lender, trainer, searcher, or shopkeeper--and serving the diverse needs of all their patrons. End-users as now re-defined as: academic end-users; practitioner end-users, and general public end-users. (SWC)

The End-User Cometh and Cometh Again and Again

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The end-user cometh and cometh again and again

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Abstract: *The bogy of the end-user has haunted the information profession since the appearance of the first online services in the early 1980s. During the 1980s the profession constantly debated the outcome of end-use — some doubting whether it would ever happen and others forecasting the Apocalypse. Since then the likes of Textline, NEXIS and FT Profile have been joined by waves of even more user-friendly CD-ROMs; and most recently we have been visited by the Internet. Nobody is questioning the permanence or fickleness of end-use anymore, but few seem to be debating its consequences. This article examines the impact of three rounds of end-users on the information profession and looks ahead to what the future holds.*

Keywords: end-users, online services, the Internet

1. Introduction

The Internet represents both a threat and challenge to all professional and mediating groups, but especially to those in the information industry — journalists, publishers, booksellers and information professionals — for it has the potential to turn their worlds upside down and inside out. Although it has to be said that it probably poses the greatest and gravest threat to information professionals and specialists. There is every chance that this group will become the first major road casualties along the information superhighway. But maybe information professionals have become complacent as a result of having beaten off the first and second end-user incursions on their territory: the first triggered off by the appearance of full-text online services like FT Profile, Textline and NEXIS, and the second by the arrival of the allegedly user-friendly CD-ROMs; for there appears to be very little end-user debate in the professional press these days. Or maybe it is simply a question of being resigned to their own fate? Using the experiences of those who were in the forefront of the first two waves of end-users, this article will examine the impact of the third, and possibly terminal, incursion — that occasioned by the Internet.

2. The end-user waves

2.1. The impact of the first wave: full-text, natural language online systems

What lessons can be learnt from the first wave of end-users that entered the online information domain in the mid-1980s on the back of full-text hosts like NEXIS, Textline and FT Profile? A number of pundits at the time felt that this wave would be terminal for the profession. Encouraged by the early successes of these full-text services with end-users, commentators began to write the epitaph of the intermediary. Jones, for instance, thought that 'the evolution of the professional online searcher must be regarded as a temporary aberration' (Ref 1). A quote from a *Financial Times* business report on the online industry gives a flavour of much of the writing at the time: 'The emphasis is expected to shift further away from the librarian and researcher to the end-user because of the current explosion of microcomputer installations and increased user friendly software' (Ref 2). History tells us that these comments were wide of the mark. In most cases what actually happened proved to be very different. Consider the experiences of newspaper libraries, the early leaders, who met head-on the challenge of a proficient group of information handlers being given direct access to a full text host with their own newspaper on it (FT Profile). Despite early anxieties, those newspaper librarians who responded to the threatened loss of their monopoly of the newspaper cutting archive by embracing end-use and not fighting it saw that the prime impact of end-use was to increase the demand on mediated searching (Ref 3). Through end-use journalists came to

understand online's potential and the librarian's skills in searching online databases. It turned out that the vast majority of end-users also wanted to delegate — usually the more difficult searches or those for hosts they were not familiar with. In broadcasting, where end-use had never gained anything more than a toe hold, libraries were devastated — many disappearing and the remaining ones shrinking to one or two person bands, usually left looking after the video collection (Ref 4).

Turning to the end-user experiences of other leading professional groups, the experience was much the same. MPs at the House of Commons, despite being given unprecedented access to online systems, wholly eschewed end-use, even when it concerned so-called user-friendly Textline and FT Profile (Ref 5). Shortages of time and a willingness to delegate meant that they were more than happy to get the Library, or their own research assistants, to search on their behalf. Even their research assistants, despite taking to online searching with some alacrity, would delegate the search to librarians in increasing volumes — a case of the online search being delegated twice. Take, too, the case of lawyers. LEXIS, the full text legal online system, came on the market with the expressed purpose of excluding the middleman (the librarian) from the legal information chain: in the beginning the company behind the service, Mead Data Central, would only provide the service to law practices and schools and would not train librarians in its use. They failed miserably in their attempt and now LEXIS whole-heartedly embraces librarians, probably their biggest customers now. Lawyers have shown little interest in searching databases themselves.

Some information professionals missed out completely on the first wave of end-users, and they were largely public librarians. And it was simply not just a case of lack of money that saw them duck the opportunity, for even when they were offered near-free access to an end-user online service that fitted their community profile — Volnet — they still would not take the plunge[2]. It seemed that they were frightened to change, to innovate.

2.2. The impact of the second wave: CD-ROMs

It was generally thought that CD-ROM was a much more appropriate end-user tool. You could let end-users loose without fear of bankruptcy. It was also alleged that because it was such a user-friendly medium, what with its menus and windows, there were no costly training implications. More importantly, perhaps, it fitted into the existing scheme of paying for information — you paid up front, on an annual subscription basis, just like for a serial. In consequence many public libraries belatedly entered the fray. A delay, it will be argued later, that cost them dear.

For some end-users the advent of CD-ROM meant the loss of access to online systems. Many universities cut back on online and increased CD-ROM expenditure. Indeed, the great growth in CD-ROM use has largely come courtesy of university students. Other groups of user were not so easily pleased. Journalists almost wholly absented themselves from the technology, citing currency problems, poor retrospective coverage and limited range as the reasons. Politicians are sceptical. At the House of Commons, for instance Reuters-Textline was replaced with CD-ROMs that have since been networked via the Parliamentary Data Video Network (PDVN). A questionnaire study of pilot PDVN users — MPs and their research assistants — showed that they were not all that impressed, rating fax as the most *useful* feature of the PDVN: CD-ROMs came a poor third after POLIS (their own library OPAC) and they bemoaned CD-ROM's lack of currency (Ref 6).

This time around nobody disputed the end-user credentials of the technology — it was almost as though this was an article of faith. But despite the greatly increased access to computerised systems provided by CD-ROM, and its widely claimed user-friendly characteristics, there were still people — sometimes very eminent ones — who encountered problems with the technology. Take the published observations of one medical librarian: 'I have frequently found people searching [Medline CD-ROM] in the most peculiar, inefficient and totally illogical fashion. It is a slightly hair-raising prospect when the searcher is a junior doctor sent by his chief to do the spade work for an article to be submitted for publication, let alone searches relating to treatment of actual patients' (Ref 7). Nor was anybody talking of end-users taking away jobs anymore. It could be that information professionals had learnt from their experiences with online: CD-ROM was creating more work, too. More likely, the fact that this technology was not so powerful made them feel rather more secure: online was for the information professionals while CD-ROM with its poor currency, limited archive and coverage was very much a system for the end-users. A case of first class and second class information services. Now, that seemed to fit the natural order of things.

Of course, CD-ROM use is still growing very rapidly and it is only the arrival of the Internet that has put it into the shade. Indeed, there is a danger that a profession so fixated by the Internet will fail to take account of the rapid march of the CD-ROM. The figures speak for themselves: in 1990 817 titles were published; by 1995 the number had reached 9691; in 1992 unit sales reached 2 million; just two years later the figure was 27.8 million[3] By any standards this is truly spectacular growth.

2.3. The impact of the third wave: the Internet

Just when CD-ROM looked to be burying online as an end-user tool along came the Internet. Interestingly, all the things that were apparently wrong with online — costly phone lines, fragile and complex modems etc. — were suddenly all the right things with the Internet, because through these things instant access to current data on a huge world-wide scale could be obtained. The Internet does herald a new end-user dawn. For a start, while the first wave saw thousands of end-users entering the marketplace and the second wave tens of thousands of users, with the Internet we are talking millions, if not tens of millions. End-use has jumped off the scale, and in a tiny fraction of the time it took online hosts to obtain their modest base. When millions of people start using online services for the first time, and in a very short space of time, it has to make a big wave. It would be naive in the

extreme if we did not think this was going to have a major impact on the information profession, for after all they are, arguably, standing closest to the wave. Undoubtedly, people will do a lot more of their own searching and it naturally follows that they will do some of the searching they once delegated to information professionals.

Irrespective of its scientific and academic beginnings, with the Internet you have an information system firmly rooted in the end-user domain. End-users clasp it firmly to their bosom: nobody mentions it as a tool for the intermediary, which would be politically incorrect. Even intermediaries seem certain of its end-user provenance. Some do throw bricks at it: lack of authority, poor response times, insufficient precision and lack of security are the ones thrown most often (Ref 8). But the bricks just bounce of, largely unnoticed by the adoring hordes of end-users and other information handlers, like journalists. Coming to it through Netscape, Lycos and so on you are constantly reminded of its end-user pedigree by the mouse-driven Windows environment, advertisements; colour, pictures, and simple-like-falling-off-a-log search systems. With the Internet comes information systems that reflect end-users' rough and ready searching styles, with much being left to browsing. But information professionals have to get away from rubbishing end-user searching styles and systems, and start training them to get the most from these systems.

For once, and for the very first time with an online service, the end-user and the intermediary are competing on a level-playing field. Both groups have unrestricted and unparalleled access to information. Training is no longer the key determinant here: luck, experience and time are probably among the key components of search success. The fact that the Internet, if not free, is cheap will also undoubtedly play an important role in the end-user will-they-won't-they debate. With cheap or seemingly free online access another potential barrier to end-user access has been demolished. As librarians were originally responsible — and still are in many cases — for providing access to documents then the fact that the Internet leads to direct document delivery will spell the real challenge: might information handling then become the gift of the individual worker?

The Internet also brings with it opportunities but only for those information professionals that grasp them quickly. In a world of rapid and constant change, information professionals cannot sit back and let others make the running as some suggest. If anything has been learnt after more than two decades of IT watching then it is that if you (1) wait until the technology stabilises, you will wait for ever; or (2) let others lead, then they will take all the spoils. Thus the Internet greatly raises the profile of online searching and it increases people's awareness of online retrieval (and their frailties and limitations in this regard). This can result — as in the case of online — in greater use of the information specialist, too. Furthermore, the Internet introduces a whole new army of users to the world of online — the information unaware. Through the Internet they will also be introduced to the world of intermediaries — a whole new market for their services. In addition, the Internet acts as a marketing and recruiting tool for the information profession. Increasingly prospective library school students, when asked the question of why they want to join the profession, reply that they want to learn about IT because that is where the future lies — and by IT they mean, online, CD-ROM, the Internet et al.

Challenges, but also changes: information professionals will have to become more specialist, more trainer, more proactive and more reference specialist: moving between the various information channels, balancing one up against another and choosing the most cost-effective option. The first wave of end-users gave information professionals time to adapt and change, and to ready themselves for the really big challenges to come. It gave information professionals time to show that they had expertise and authority in IT matters; it gave them time to create a new market for their services. Those who took the opportunity earlier are very well placed to handle the challenges of the Internet: their users will turn naturally to them for help in the times ahead, but for the others it is probably too late — they will be swept along by the tidal wave and maybe swept away altogether (and there will be casualties). Even amongst those who have profited from online and CD-ROM there is no room for complacency. This wave by contrast is of tidal-wave proportions — we have not seen anything like it yet.

Of course, increased accessibility to information is one thing but wanting to search or find information is something else. Before the Internet came along users were not exactly short of information — the fax, e-mail, online databases and the phone were already taxing people's ability to absorb information. Indeed, it could be argued that in the long run the Internet and its ilk will prove to be counterproductive: they will boost considerably the host of information want-nots. It is most likely that it will be those people deprived of these systems and communication forms (the home user) or those people for whom access to information gives them the edge or trade (business people and journalists, for instance) who will pitch in most actively.

There is a downside to the rapid and widespread acquaintance with end-use: lots of people become instant experts. The acquaintance with the Internet makes them an online expert: an information expert, even. This qualifies them to make judgements about all online purchases — CD-ROMs, commercial hosts etc. Here is where the authority and expertise of the information professional will be put on the line. At one newspaper, which will have to remain anonymous to protect the identity of the librarian, the Managing Editor is dictating online policies and purchases, against professional advice and wisdom, obtained as a result of ten year's experience with online. The end-user journalists will be the losers. One can see the same thing happening in regard to computer professionals, emboldened by the huge interest in computer networks. Already in the States library schools have closed as students have looked to computing for the IT skills needed in today's information society.

3. Public libraries — the biggest threat

Of all information professionals, public librarians face the greatest threat from the digital revolution. And they largely have themselves to blame for this. They largely rejected the advances of online in the 1980s, partly

because it was an affront to some of their principles, like charging for information, for instance; partly because it was seen to be elitist; and partly because it was new, and public libraries have never been very good at new product development. That meant they made a very late start. By not clambering aboard the online bandwagon earlier they lost their role and authority (and gained no reputation) for overseeing machine-readable data. A belated attempt to get involved in CD-ROM, a technology potentially as expensive as online but easier to administer and police, is also running into difficulty. They cannot make up their minds as to their role: lender, trainer, searcher or shopkeeper. Some indeed question whether they have any role at all. A hard-copy mentality and a hopeless mission to meet all the disparate needs of their users acts like a ball and chain on their efforts. Thus it is argued that, because the elderly are the key user group in most public libraries, there is no point introducing technology for this group would not be receptive to it. Even if this was true, the plain fact is that the elderly are such an important group because public libraries provide what they want — lots of hard-copy fiction. If you filled libraries with Internet terminals and CD stations then things would soon change, and you would find that the young would become the chief customer. But in a world without elastic budgets you have to let go of one group to get to the other, and that public libraries have manifestly been painfully slow to do. What is plain, though, is that the answer is not to de-professionalise the service, which appears to be the strategy of an increasing number of local authorities.

4. Re-defining the end-user

So many end-users have entered the marketplace that there needs to be a re-examination of the term 'end-user' itself. The minority are now the majority. In the very early days of online end-users, computer enthusiasts meant little more than a few keen scientists and academics. Then came the professional groups, lead by journalists and business people. These were followed by students in very large numbers, and finally by the general public, who are also likely to enter the fray in even larger numbers. Given such heterogeneity and the sheer size of the group — at one time very much smaller in number than the information professionals and now totally dwarfing them — it seems sensible to divide them into more meaningful and more homogeneous groups: academic end-users; practitioner end-users and the general public as end-users, for instance.

5. Conclusions

When the senior author of this paper first started researching end-users in the mid-1980s there were probably no more than a couple of hundred end-users in the UK: now there are probably more than a million. In the circumstances it is remarkable that the library (and information profession) as we know it has stood the passage of time. But one possible reason why the traditional model of a large, centralised physical collection supported by online searching professionals has stood the test of time so far is because there really was no genuine alternative (threat) until very, very recently. The real test will surely come in the next three years.

With the Internet there will undoubtedly be some losers and some winners, rather as was the case with online and CD-ROM. It will not herald the end of information professionalism but it will change its shape irrevocably. The Internet is capable of delivering a genuine and suitable information alternative. What will compensate for the loss of users to the Internet will be hoards of users who will enter the information environment for the very first time: they will need help, training, protection and advice (services not always traditionally associated with the librarian). There will be a need for someone who embraces and co-ordinates all the various information channels/media. There will be a need for someone to do the difficult searches, the searching for people who have simply not got the time to search — and there are lots and lots of them.

There will be increasingly a need to customise, tailor-make and validate information flows — there is too much information around for people to find their way around and to absorb it when they find it. With increased and unlimited access comes the inevitable problems of information overload, and the information anxiety that results. We have moved rapidly and frighteningly from under-provision to massive over-provision of information. With such large volumes of open-access data comes too the problems of inconsistent data, errors and useless or redundant information. Paradoxically the high tech solution — initially anyway — to a largely high tech problem seems to be the creation of faster machines, with more capacity, faster modems or dedicated lines and so on to reduce the time the user is searching, processing and waiting for the information. But the increased speed simply provides more information in a shorter time span. We are undoubtedly running up against our physiological limits in terms of the information we can process and absorb. As Toffler (Ref 9) notes, our capabilities in this respect are finite. The latest high tech solution is 'intelligent agents': anything it seems but the established and trusted alternative — the librarian, who will probably still be there after the 'intelligent agents' have long gone.

Finally, there will be all the added work that comes from end-users obtaining a greater awareness of the wealth of electronic information services that are out there. Security, standards and indexing concerns also have not gone away; indeed, if anything these concerns are greater now than ever before. The requirement though will be for more specialists, more computer-qualified people, working in smaller groups — and just probably for less of them.

Note

The authors are currently investigating the impact of the Internet on journalists and media librarians. The oral presentation will include some findings from this research, to support and illustrate the points made in the article.

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Footnotes

(1) The group is multi-disciplinary and international in character and contains both academics and practitioners. It also counts among its membership Professor Peter Cole, School of Journalism, University of Central Lancashire; Helen Martin, Chief Librarian at *The Guardian*; Colette Batterbee, Department of Information Science, City University; and Tom Dobrowolski, Institute of Library and Information Science, University of Warsaw.

(2) Volnet hosts a number of databases from community and voluntary organisations, many of direct relevance to the work of public libraries. It was offered to public librarians in its online form for less than £100 a year, unlimited use. There were few takers.

(3) Source: TFPL (1993-95).

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